

## Nurse Family Partnership

Benefit-cost estimates updated June 2016. Literature review updated April 2012.

Current estimates replace old estimates. Numbers will change over time as a result of model inputs and monetization methods.

The WSIPP benefit-cost analysis examines, on an apples-to-apples basis, the monetary value of programs or policies to determine whether the benefits from the program exceed its costs. WSIPP's research approach to identifying evidence-based programs and policies has three main steps. First, we determine "what works" (and what does not work) to improve outcomes using a statistical technique called meta-analysis. Second, we calculate whether the benefits of a program exceed its costs. Third, we estimate the risk of investing in a program by testing the sensitivity of our results. For more detail on our methods, see our [Technical Documentation](#).

**Program Description:** The Nurse Family Partnership program provides intensive visitation by nurses during a woman's pregnancy and the first two years after birth. The goal is to promote the child's development and provide support and instructive parenting skills to the parents. The program is designed to serve low-income, at-risk pregnant women bearing their first child.

### Benefit-Cost Summary Statistics Per Participant

#### Benefits to:

Taxpayers	\$6,518	Benefit to cost ratio	\$1.61
Participants	\$8,747	Benefits minus costs	\$6,159
Others	\$4,475	Chance the program will produce	
Indirect	(\$3,531)	benefits greater than the costs	58 %
<u>Total benefits</u>	<u>\$16,208</u>		
<u>Net program cost</u>	<u>(\$10,049)</u>		
Benefits minus cost	\$6,159		

The estimates shown are present value, life cycle benefits and costs. All dollars are expressed in the base year chosen for this analysis (2015). The chance the benefits exceed the costs are derived from a Monte Carlo risk analysis. The details on this, as well as the economic discount rates and other relevant parameters are described in our [Technical Documentation](#).

## Detailed Monetary Benefit Estimates Per Participant

Benefits from changes to: <sup>1</sup>	Benefits to:				
	Participants	Taxpayers	Others <sup>2</sup>	Indirect <sup>3</sup>	Total
Crime	\$0	\$1,268	\$2,899	\$630	\$4,797
Child abuse and neglect	\$1,241	\$389	\$0	\$193	\$1,823
K-12 grade repetition	\$0	(\$46)	\$0	(\$23)	(\$69)
K-12 special education	\$0	(\$166)	\$0	(\$82)	(\$248)
Property loss associated with alcohol abuse or dependence	\$1	\$0	\$1	\$0	\$1
Health care associated with disruptive behavior disorder	\$4	\$13	\$16	\$6	\$39
Labor market earnings associated with child abuse & neglect	\$4,934	\$2,241	\$0	\$177	\$7,351
Costs of higher education	(\$207)	(\$245)	(\$78)	(\$122)	(\$652)
<b>Subtotals</b>	<b>\$5,972</b>	<b>\$3,454</b>	<b>\$2,839</b>	<b>\$779</b>	<b>\$13,044</b>
From secondary participant					
Crime	\$0	\$171	\$453	\$85	\$710
Labor market earnings associated with high school graduation	\$3,739	\$1,698	\$1,705	\$0	\$7,143
Public assistance	(\$277)	\$652	\$0	\$324	\$698
Health care associated with educational attainment	(\$110)	\$403	(\$441)	\$200	\$52
Food assistance	(\$359)	\$397	\$0	\$197	\$236
Costs of higher education	(\$219)	(\$258)	(\$82)	(\$129)	(\$687)
<b>Subtotals</b>	<b>\$2,774</b>	<b>\$3,063</b>	<b>\$1,636</b>	<b>\$678</b>	<b>\$8,152</b>
Adjustment for deadweight cost of program	\$0	\$1	\$0	(\$4,989)	(\$4,987)
<b>Totals</b>	<b>\$8,747</b>	<b>\$6,518</b>	<b>\$4,475</b>	<b>(\$3,531)</b>	<b>\$16,208</b>

<sup>1</sup>In addition to the outcomes measured in the meta-analysis table, WSIPP measures benefits and costs estimated from other outcomes associated with those reported in the evaluation literature. For example, empirical research demonstrates that high school graduation leads to reduced crime. These associated measures provide a more complete picture of the detailed costs and benefits of the program.

<sup>2</sup>"Others" includes benefits to people other than taxpayers and participants. Depending on the program, it could include reductions in crime victimization, the economic benefits from a more educated workforce, and the benefits from employer-paid health insurance.

<sup>3</sup>"Indirect benefits" includes estimates of the net changes in the value of a statistical life and net changes in the deadweight costs of taxation.

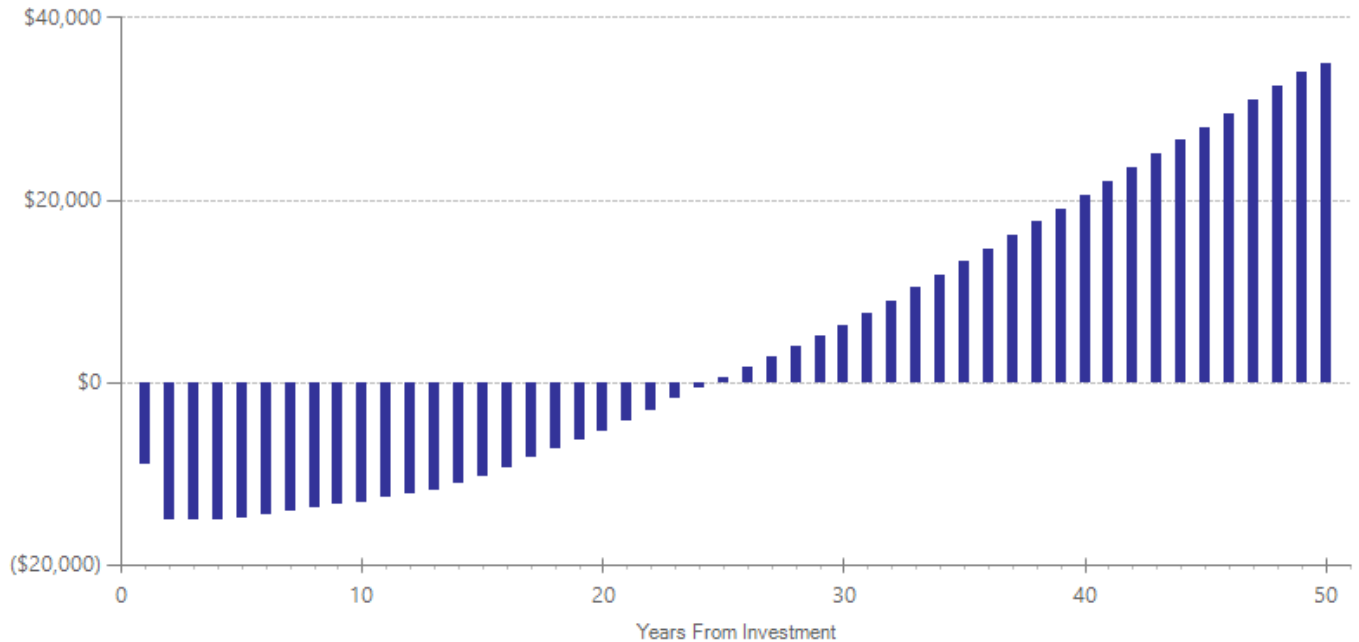
## Detailed Annual Cost Estimates Per Participant

	Annual cost	Year dollars	Summary	
Program costs	\$5,383	2007	Present value of net program costs (in 2015 dollars)	(\$10,049)
Comparison costs	\$0	2007	Cost range (+ or -)	10 %

The number of nurse visits participants received in the studies in our meta-analysis varied from 27 to 33 on average, spread over about a two-year period. We based our average annual per-family cost on expenditures per family and average length of program participation in Washington State, provided by Kristen Rogers at Nurse Family Partnership, Northwest Regional Office July, 2008.

The figures shown are estimates of the costs to implement programs in Washington. The comparison group costs reflect either no treatment or treatment as usual, depending on how effect sizes were calculated in the meta-analysis. The cost range reported above reflects potential variation or uncertainty in the cost estimate; more detail can be found in our [Technical Documentation](#).

## Detailed Annual Cost Estimates Per Participant



The graph above illustrates the estimated cumulative net benefits per-participant for the first fifty years beyond the initial investment in the program. We present these cash flows in non-discounted dollars to simplify the “break-even” point from a budgeting perspective. If the dollars are negative (bars below \$0 line), the cumulative benefits do not outweigh the cost of the program up to that point in time. The program breaks even when the dollars reach \$0. At this point, the total benefits to participants, taxpayers, and others, are equal to the cost of the program. If the dollars are above \$0, the benefits of the program exceed the initial investment.

## Meta-Analysis of Program Effects

Outcomes measured	Primary or secondary participant	No. of effect sizes	Treatment N	Adjusted effect sizes and standard errors used in the benefit-cost analysis						Unadjusted effect size (random effects model)	
				First time ES is estimated			Second time ES is estimated				
				ES	SE	Age	ES	SE	Age	ES	p-value
Crime	Secondary	2	266	-0.034	0.114	31	-0.034	0.114	41	-0.265	0.472
Crime	Primary	1	37	-0.252	0.209	15	-0.252	0.209	25	-0.700	0.001
High school graduation	Secondary	2	401	0.035	0.086	23	0.035	0.086	23	0.097	0.271
Test scores	Primary	3	368	0.021	0.067	10	0.014	0.073	17	0.059	0.374
Child abuse and neglect	Primary	2	206	-0.355	0.141	15	-0.355	0.141	17	-0.626	0.012
K-12 grade repetition	Primary	3	313	0.048	0.102	12	0.048	0.102	17	0.130	0.407
K-12 special education	Primary	3	313	0.023	0.122	12	0.023	0.122	17	0.030	0.894
Disruptive behavior disorder symptoms	Primary	2	329	-0.075	0.076	12	-0.036	0.042	15	-0.208	0.006
Public assistance	Secondary	3	470	-0.054	0.059	28	-0.054	0.059	38	-0.191	0.086
Substance abuse	Secondary	3	470	-0.080	0.128	28	-0.080	0.128	38	-0.274	0.377
Employment	Secondary	3	423	0.036	0.062	26	0.036	0.062	36	0.120	0.176
Internalizing symptoms	Primary	3	526	-0.083	0.079	12	-0.060	0.066	14	-0.229	0.005
Food assistance	Secondary	3	470	-0.054	0.059	28	-0.054	0.059	38	-0.223	0.143

Meta-analysis is a statistical method to combine the results from separate studies on a program, policy, or topic in order to estimate its effect on an outcome. WSIPP systematically evaluates all credible evaluations we can locate on each topic. The outcomes measured are the types of program impacts that were measured in the research literature (for example, crime or educational attainment). Treatment N represents the total number of individuals or units in the treatment group across the included studies.

An effect size (ES) is a standard metric that summarizes the degree to which a program or policy affects a measured outcome. If the effect size is positive, the outcome increases. If the effect size is negative, the outcome decreases.

Adjusted effect sizes are used to calculate the benefits from our benefit cost model. WSIPP may adjust effect sizes based on methodological characteristics of the study. For example, we may adjust effect sizes when a study has a weak research design or when the program developer is involved in the research. The magnitude of these adjustments varies depending on the topic area.

WSIPP may also adjust the second ES measurement. Research shows the magnitude of some effect sizes decrease over time. For those effect sizes, we estimate outcome-based adjustments which we apply between the first time ES is estimated and the second time ES is estimated. We also report the unadjusted effect size to show the effect sizes before any adjustments have been made. More details about these adjustments can be found in our [Technical Documentation](#).

## Citations Used in the Meta-Analysis

- Eckenrode, J., Henderson, C.R., Jr., Powers, J., Campa, M., Lucky, D.W., Olds, D., . . . Sidora-Arcoleo, K. (2010). Long-term effects of prenatal and infancy nurse home visitation on the life course of youths: 19-year follow-up of a randomized trial. *Archives of Pediatrics and Adolescent Medicine*, 164(1), 9-15.
- Kitzman, H.J., Olds, D.L., Cole, R.E., Hanks, C.A., Anson, E.A., Arcoleo, K.J., . . . Holmberg, J.R. (2010). Enduring effects of prenatal and infancy home visiting by nurses on children: Follow-up of a randomized trial among children at age 12 years. *Archives of Pediatrics & Adolescent Medicine*, 164(5), 412-418.
- Olds, D.L., Eckenrode, J., Henderson, C.R., Jr., Kitman, H., Powers, J., Cole, R., . . . Luckey, D. (1997). Long-term effects of home visitation on maternal life course and child abuse and neglect: Fifteen-year follow-up of a randomized trial. *JAMA*, 278(8), 637-643.
- Olds, D., Henderson, C.R., Jr., Cole, R., Eckenrode, J., Kitman, H., Luckey, D., . . . Powers, J. (1998). Long-term effects of nurse home visitation on children's criminal and antisocial behavior: 15-year follow-up of a randomized controlled trial. *JAMA*, 280(14), 1238-1244.
- Olds, D.L., Robinson, J., O'Brien, R., Luckey, D.W., Pettitt, L.M., Henderson, C.R., Jr., . . . Talmi, A. (2002). Home visiting by paraprofessionals and by nurses: A randomized, controlled trial. *Pediatrics*, 110(3), 486-496.
- Olds, D.L., Robinson, J., Pettitt, L., Luckey, D. W., Holmberg, J., Ng, R.K., . . . Henderson, C.R., Jr. (2004). Effects of home visits by paraprofessionals and by nurses: Age 4 follow-up results of a randomized trial. *Pediatrics*, 114(6), 1560-1568.
- Olds, D.L., Kitman, H., Cole, R., Robinson, J., Sidora, K., Luckey, D.W., . . . Holmberg, J. (2004). Effects of nurse home- visiting on maternal life course and child development: Age 6 follow-up results of a randomized trial. *Pediatrics*, 114(6), 1550-1559.
- Olds, D.L., Kitman, H., Hanks, C., Cole, R., Anson, E., Sidora-Arcoleo, K., . . . Bondy, J. (2007). Effects of nurse home visiting on maternal and child functioning: Age-9 follow-up of a randomized trial. *Pediatrics*, 120(4), 832-845.
- Olds, D L., Kitman, H.J., Cole, R.E., Hanks, C.A., Arcoleo, K.J., Anson, E.A., . . . Stevenson, A. (2010). Enduring effects of prenatal and infancy home visiting by nurses on maternal life course and government spending: Follow-up of a randomized trial among children at age 12 years. *Archives of Pediatrics & Adolescent Medicine*, 164(5), 419-424.
- Sidora-Arcoleo, K., Anson, E., Lorber, M., Cole, R., Olds, D., & Kitman, H. (2010). Differential effects of a nurse home- visiting intervention on physically aggressive behavior in children. *Journal of Pediatric Nursing*, 25(1), 35-45.
- Eckenrode, J., Henderson, C.R., Jr., Powers, J., Campa, M., Lucky, D.W., Olds, D., . . . Sidora-Arcoleo, K. (2010). Long-term effects of prenatal and infancy nurse home visitation on the life course of youths: 19-year follow-up of a randomized trial. *Archives of Pediatrics and Adolescent Medicine*, 164(1), 9-15.

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